

Rapid Watershed Assessment Resource Profile

Chippewa (MN) HUC: 7020005



Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

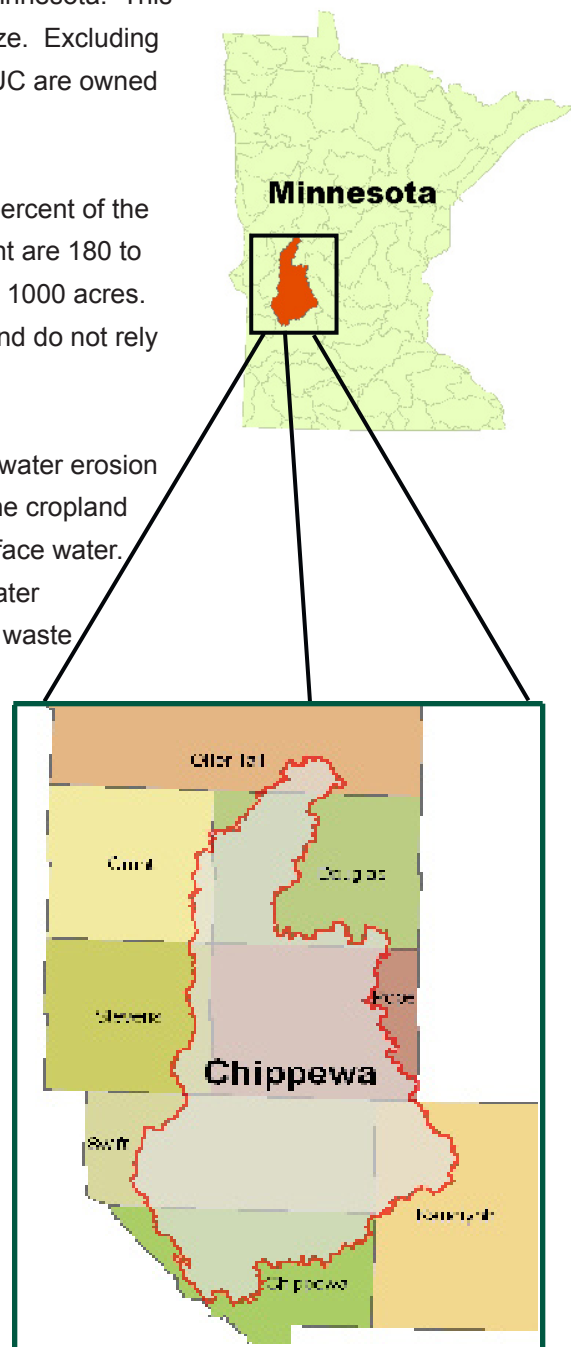
Introduction

The Chippewa 8-digit Hydrological Unit Code (HUC) Subbasin is located in the Prairie Parkland Ecological Province of Southwestern Minnesota. This agriculturally dominated watershed is 1,333,517 acres in size. Excluding open water, nearly ninety percent of the acres within the HUC are owned by private landholders.

There are 2,293 farms in the subbasin. Approximately 50 percent of the operations are less than 180 acres in size, nearly 40 percent are 180 to 1000 acres in size, and the remaining farms are larger than 1000 acres. Sixty four percent of the producers are full time operators and do not rely on off farm income.

The main resource concerns on the cropland are wind and water erosion and flooding resulting in cropland runoff. Associated with the cropland runoff are increased sediment and pollutant loadings to surface water. Additional resource concerns include surface and groundwater quality (Mercury, Turbidity, and Fecal Coliform), agricultural waste management and declining wildlife habitat.

County	Acres in HUC	% HUC
Chippewa	180,191.70	13.5
Douglas	185,819.97	13.9
Grant	25,762.27	1.9
Kandiyohi	95,502.65	7.2
Otter Tail	25,744.63	1.9
Pope	393,337.17	29.5
Stearns	61.49	0.0
Stevens	53,609.44	4.0
Swift	373,516.95	28.0
Total acres:	1,333,517.2	100



Physical Description

The Chippewa Watershed is situated in the Northern Glaciated Plains and North Central Hardwood Forest Ecoregions of Minnesota. Soils in this HUC are generally loamy clays and sands, with considerable deposits of glacial till and outwash.

Average elevation in the watershed is 1174 feet above sea level. This HUC includes Inspiration Peak located in Lake Carlos state park. Rising to 1,750 feet above sea level, Inspiration Peak boasts the second highest elevation in the state.

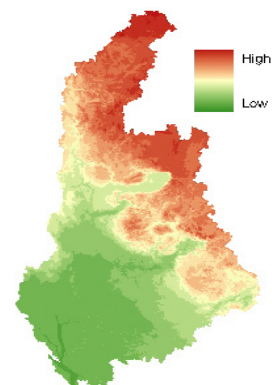
Precipitation in the watershed averages between 25 to 29 inches annually. Most lands within this watershed are not highly erodible, and are well to moderately well suited to agricultural uses. Predominate land uses / land covers are row crops (61%), followed by grass and pasture (18%), and wetlands (8%).

Land use within the Chippewa watershed is primarily agricultural, accounting for approximately 68% of the available acres. Corn and soybeans are grown on approximately 66% of cropped lands; small grains, hay, and grasslands enrolled in the Conservation Reserve Program (CRP) make up the majority of the balance.

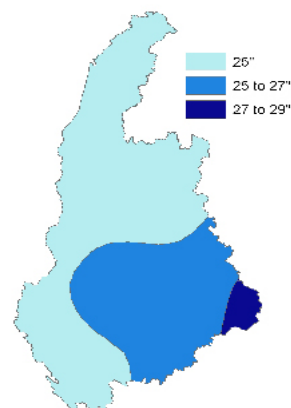
Crop lands are generally classified as moderately productive (68%), although nearly 25% are ranked as low production acres.

Development pressure is moderate, with occasional farms being parceled out for recreation or country homes.

Relief



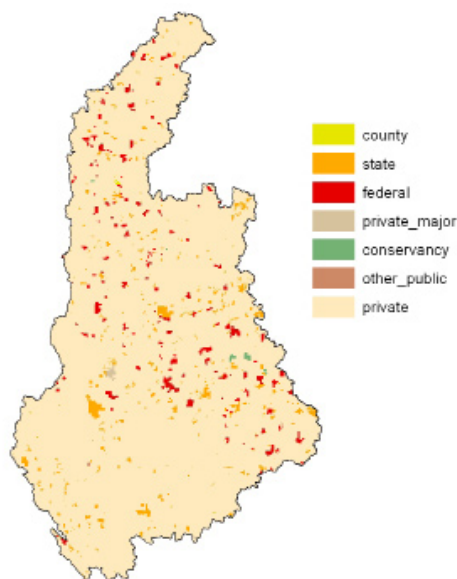
Average Precipitation (inches)



Ownership*

Ownership Type	Acres	% of HUC
Conservancy	1,274.57	0.10
County	237.24	0.02
Federal	28,958.83	2.17
Private Major	1,280.81	0.10
State-Misc.	37,391.34	2.80
Tribal	0.00	0.00
Private	1,197,393.00	89.79
Other Public	139.97	0.01
*Open Water	73,492.60	5.51
Ownership Totals:	1,333,517.20	100

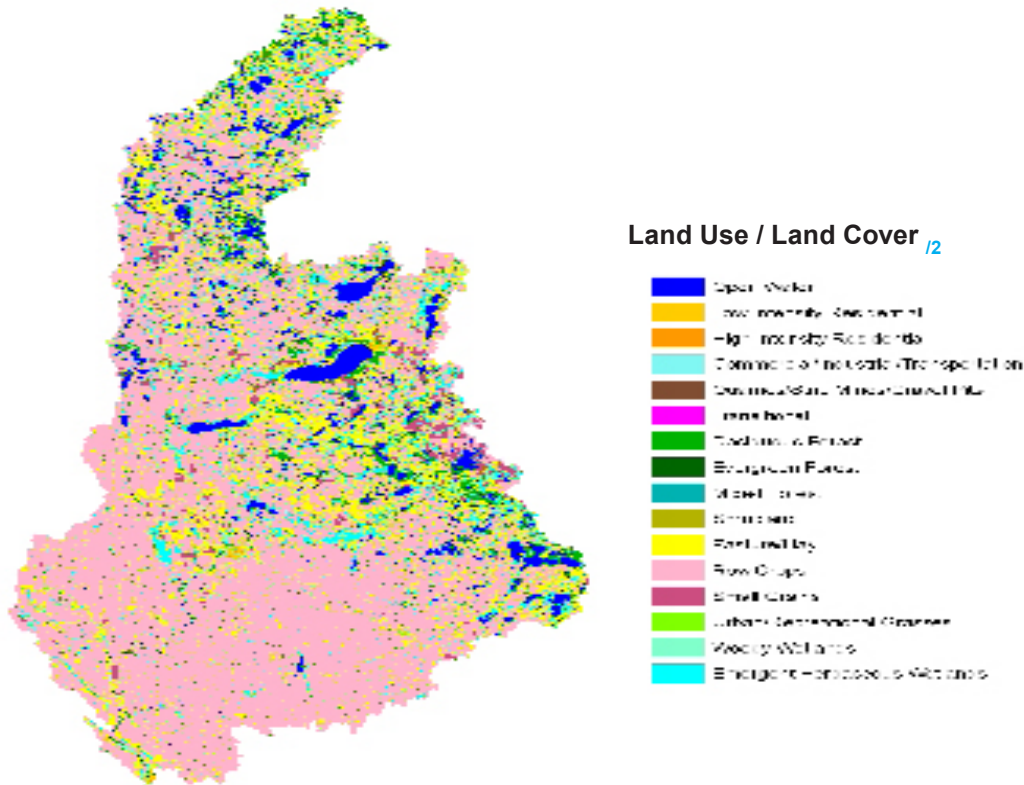
* ownership undetermined / not reflected



* Ownership totals derived from 2007 MN DNR GAP Stewardship data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

Ownership / Land Use

The Chippewa watershed covers an area of 1,333,517 acres. Nearly ninety percent of the land in the watershed is owned by private landholders (1,197,393 acres). The second largest ownership type is State, with just over 37,900 acres (2.8%), followed by Federal with approximately 28,960 acres (2.17%). Privately administered Conservancy lands amount to slightly less than 1,275 acres (0.10%), followed closely by Private-Major holdings of 1,200 acres (0.10%). County land totals comprise the smallest ownership class in the region, amounting to slightly less than 240 acres (0.02%). Ownership data indicates no major Tribal land holdings in the sub basin. Land use by ownership type is represented in the table below.



Ownership / Land Use

Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	Percent	Acres	Percent	Acres	Percent		
Forest	4,487.0	0.34	65,046.26	4.88	0.0	0.00	69533.30	5.21%
Grain Crops	2,674.8	0.20	28,966.22	2.17	0.0	0.00	31641.01	2.37%
Grass, etc	17,938.9	1.35	217,958.63	16.34	0.0	0.00	235897.55	17.69%
Orchards	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00%
Row Crops	19,014.0	1.43	789,778.46	59.23	0.0	0.00	808792.45	60.65%
Shrub etc	47.6	0.00	624.44	0.05	0.0	0.00	672.07	0.05%
Wetlands	18,400.4	1.38	88,235.97	6.62	0.0	0.00	106636.33	8.00%
Residential/Commercial	113.38		6,783.08	0.51			6896.46	0.52%
Open Water*	--	--	--	--	--	--	73492.60	5.51%

* ownership undetermined

** includes private-major

Totals:	62,562.73	4.69%	1,197,393	89.79%	0	0.00%	1333517.20	100.00%
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Physical Description (continued)

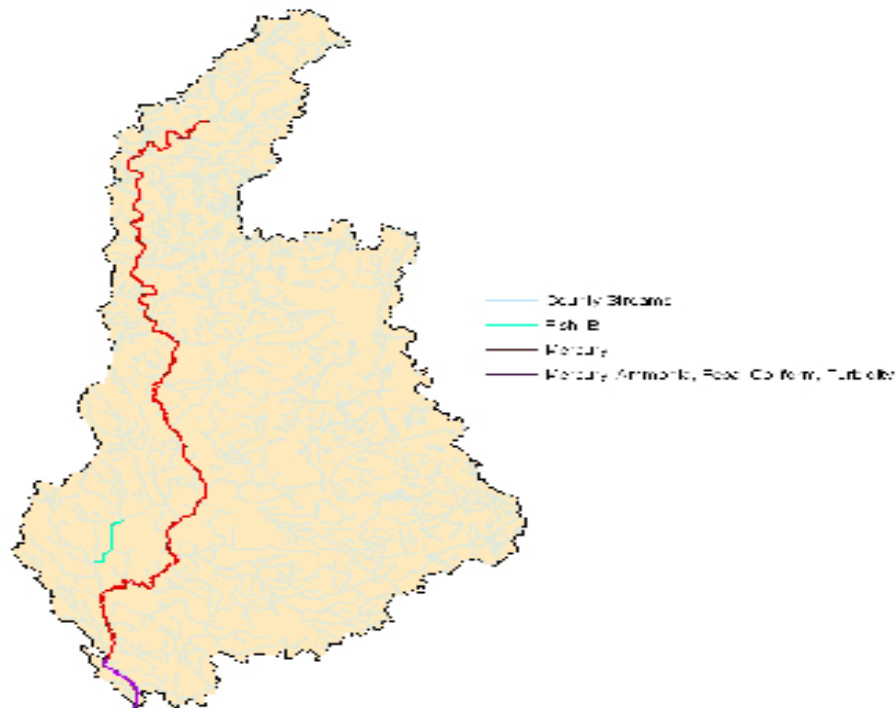
			cu. ft/sec	
Stream Flow Data	USGS 05304500 CHIPPEWA RIVER NEAR MILAN, MN	Total Avg.	380.2	
		May – Sept. Avg.	466.2	
Stream Data ^{/4} (*Percent of Total HUC Stream Miles)		ACRES/MILES	PERCENT	
		Total Miles – Major (100K Hydro GIS Layer)	2,648	
		Total Miles –303d/TMDL Listed Streams	255	
Riparian Land Cover/Land Use ^{/5} (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)		Dev/Barren	104	
		Fallow	0	
		Forest	6,430	
		Grain Crops	355	
		Grass/Pasture	9,169	
		Orchards/Vine	0	
		Row Crops	20,036	
		Shrub/Range	5	
		Water	14,258	
		Wetlands	13,398	
		Total Buffer Acres	63,755	
		Crop and Pastureland Land Capability Class ^{/6} (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)		1 – slight limitations
2 – moderate limitations	516,300			
3 – severe limitations	268,100			
4 – very severe limitations	79,500			
5 – no erosion hazard, but other limitations	7,700			
6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	35,000			
7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	19,700			
8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0			
Total Crop & Pastureland	996,700			
Irrigated Lands ^{/7} (1997 NRI Estimates for Non-Federal Lands Only)	TYPE OF LAND	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	19,600	100	0.47
	Uncultivated Cropland	0	0	0
	Pastureland	0	0	0
	Total Irrigated Lands	19,600	---	1.47%

Assessment of Waters

Section 303(d) of the Clean Water Act states that water bodies with impaired use(s) must be placed on a state's impaired waters list. A water body is "Impaired" or polluted when it fails to meet one or more of the Federal Clean Water Act's water quality standards. Federal Standards exist for basic pollutants such as sediment, bacteria, nutrients, and mercury. The Clean Water Act requires the Minnesota Pollution Control Agency (MPCA) to identify and restore impaired waters.

Minnesota's impaired waters list, updated every two years, identifies assessed waters that do not meet water quality standards. The primary tool for addressing impaired waters is a pollution reduction plan called a Total Maximum Daily Load, or TMDL. After impaired use(s) have been identified, the TMDL process identifies all sources of each pollutant. The plan then determines how much each source must reduce its contribution in order to meet the applicable water quality standard. The Clean Water Act requires a completed TMDL for each water quality violation identified on a state's impaired waters list. Lakes or river reaches with multiple impairments require multiple TMDLs.

2006 Minnesota TMDL Listed Streams - Chippewa River Watershed



Listed Stream / Reach ¹⁸	Impairment	Affected Use
Chippewa River; Watson Sag Diversion to Minnesota R	Mercury, Ammonia, Fecal Coliform, Turbidity	Aquatic Life, Aquatic Recreation, Aquatic Consumption
Chippewa River; Dry Weather Cr to Watson Sag Diversion	Mercury	Aquatic Consumption
Chippewa River; Headwaters to Little Chippewa R	Mercury	Aquatic Consumption
Chippewa River; Little Chippewa R to Unnamed Cr	Mercury	Aquatic Consumption
Chippewa River; Unnamed Cr to East Br Chippewa R	Mercury	Aquatic Consumption
Chippewa River; East Br Chippewa R to Shakopee Cr	Mercury	Aquatic Consumption
Chippewa River; Shakopee Cr to Cottonwood Cr	Mercury	Aquatic Consumption
Chippewa River; Cottonwood Cr to Dry Weather Cr	Mercury	Aquatic Consumption
Chippewa River; Headwaters to Little Chippewa R	Mercury	Aquatic Consumption
Chippewa River; Watson Sag Diversion to Minnesota R	Mercury, Ammonia, Fecal Coliform, Turbidity	Aquatic Life, Aquatic Recreation, Aquatic Consumption
Judicial Ditch 8; Unnamed Cr to Unnamed Ditch	Fish IBI	Aquatic Life

Assessment of Waters (continued)

2006 Minnesota TMDL Listed Lakes - Chippewa River Watershed

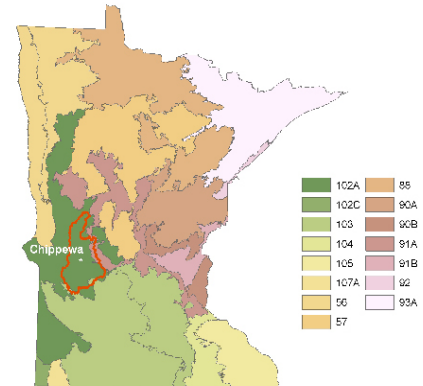


Listed Lake	Impairment	Affected Use
Maple	Mercury	Aquatic Consumption
Chippewa	Mercury	Aquatic Consumption
Whiskey	Mercury	Aquatic Consumption
Andrew	Mercury	Aquatic Consumption
Florida	Mercury	Aquatic Consumption
Norway	Mercury	Aquatic Consumption
Scandinavian	Mercury	Aquatic Consumption
Leven	Excess nutrients	Aquatic Recreation
Gilchrist	Excess nutrients	Aquatic Recreation
Reno	Excess nutrients	Aquatic Recreation
Pelican	Excess nutrients	Aquatic Recreation
Ann	Excess nutrients	Aquatic Recreation
Strandness	Excess nutrients	Aquatic Recreation
Minnewaska	Mercury	Aquatic Consumption
Signalness	Mercury	Aquatic Consumption
Malmadal	Excess nutrients	Aquatic Recreation
Emily	Excess nutrients	Aquatic Recreation

Common Resource Areas

Chippewa Watershed is located within three common resource areas, CRA 91A, 102A.1, and 103.1^{/9}

91A - Central Minnesota Outwash : Nearly level to gently sloping well drained sandy soils on outwash plains and stream terraces. There are also numerous poorly and very poorly drained mineral and organic soils. Irrigated crop land, pasture and hayland are the major land uses. Forest land is common in parts. Corn, soybeans, edible beans and potatoes are the primary irrigated crops. Forage crops are also extensively grown. Resource concerns are wind erosion water quality, nutrient management, improperly managed grazing.



102A - Rolling Till Prairie: Gently sloping to steep, loamy glacial till soils with scattered sandy outwash soils and silty alluvial flood plains soils. This area is part of the Prairie Pothole region of the upper Midwest. Predominantly cropped to corn and soybeans with increasing hayland and pasture and small grains in the western part. Resource concerns are water and wind erosion, nutrient management and water quality.

Only the major CRA units are described above.
For further information, go to:
<http://soils.usda.gov/survey/geography/cra.html>

103 – Iowa and Minnesota Till Prairies: Primarily loamy glacial till soils with scattered lacustrine areas, potholes, outwash and flood plains. Nearly level to gently undulating with relatively short slopes. Most of the wet soils have been artificially drained to maximize crop production. Primary land use is cropland. Corn, soybeans, sugar beets, peas and sweet corn are the major crops. Native vegetation was dominantly tall grass prairie. Resource concerns are water and wind erosion, nutrient management, and water quality.

Soils / Geology^{/10}

The eastern half of the Chippewa River Watershed, extending from approximately Evansville in the north to just below the town of DeGraff in the south, lies within the North Central Hardwood Forest Ecoregion. More specifically, with the exception of a long, narrow section of the Belgrade-Glenwood outwash plain along the east-central edge of the basin, the eastern half of the watershed falls within the geomorphic setting of the Alexandria Moraine Complex. This morainal complex is composed of well drained, loamy, silty, sandy and mucky soils with moderate to steep sloping landscapes (6- 45%), producing a large potential for sediment delivery to streams. As such, water erosion potential within this section of the watershed is classified as moderate to high.

The section of the watershed situated in the Belgrade-Glenwood outwash plain, lying east of the line from Glenwood in the north to Lake Johanna in the south, is characterized by nearly level to gently sloping (2-6%), well drained landscapes with sandy-loamy soils of moderate water and wind erosion potential. Lands in the western half of the Chippewa River Watershed fall within the Northern Glaciated Plains Ecoregion, primarily within three geomorphic settings, the Big Stone Moraine on the far western edge, the Appleton-Clontarf Outwash Plain along the lower Chippewa River, and the Benson Lacustrine Plain within the south-central section of the watershed. Landscapes within the Big Stone moraine are characterized as rolling (6-12 %), with well drained, silty and loamy soils.

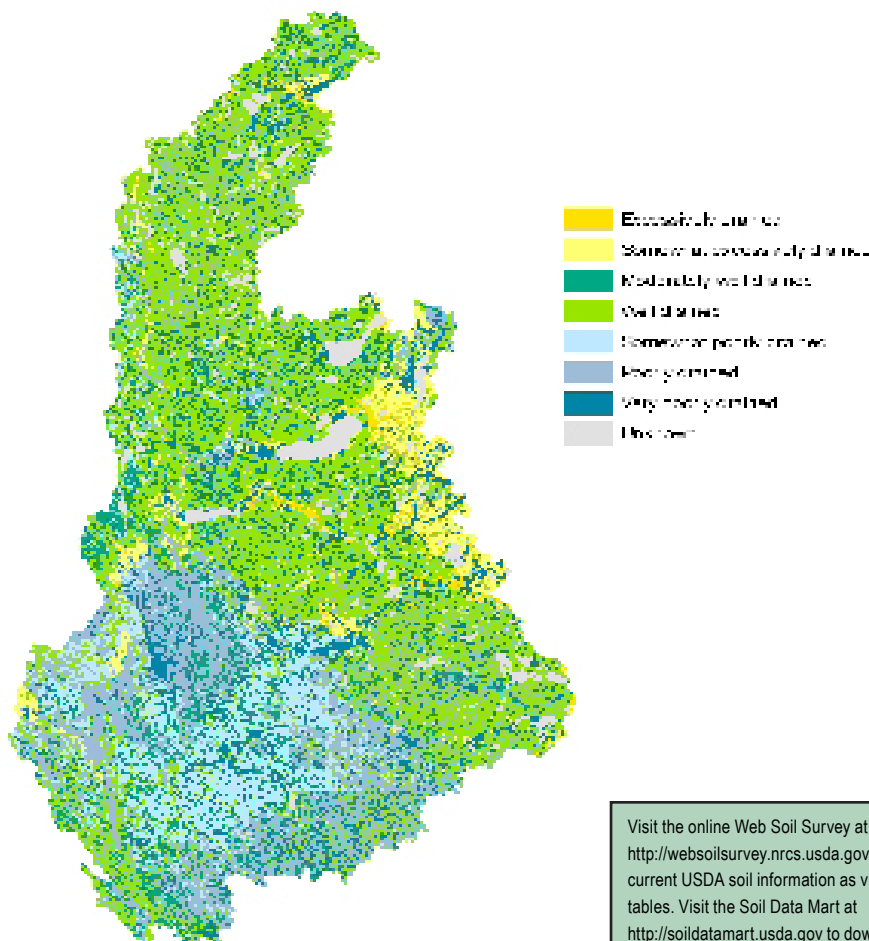
Water erosion potential within the moraine is generally classified as moderate. Lands within the Appleton-Clontarf outwash are characterized as being nearly level to gently sloping (2-6%), poorly drained, and extensively tiled. Water and wind erosion potentials are classified as moderate for this region. The Benson Lacustrine Plain is also nearly level (0-2%), poorly drained and extensively tiled. Soil textures in the lacustrine plain range from silty clay to silt loam, water erosion potentials are high for lands adjacent to streams and much of the plain has the potential for significant wind erosion.

Visit the online Web Soil Survey at
<http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at
<http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Seven classes of natural soil drainage are recognized—excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the “Soil Survey Manual.”



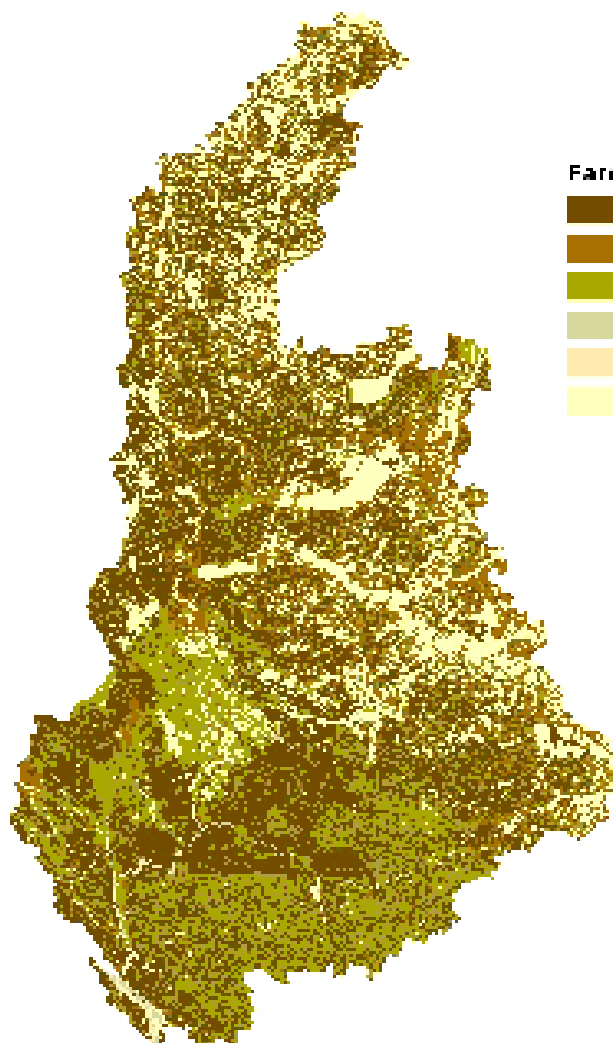
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Farmland Classification







Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland.

Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.



Farmland Classification

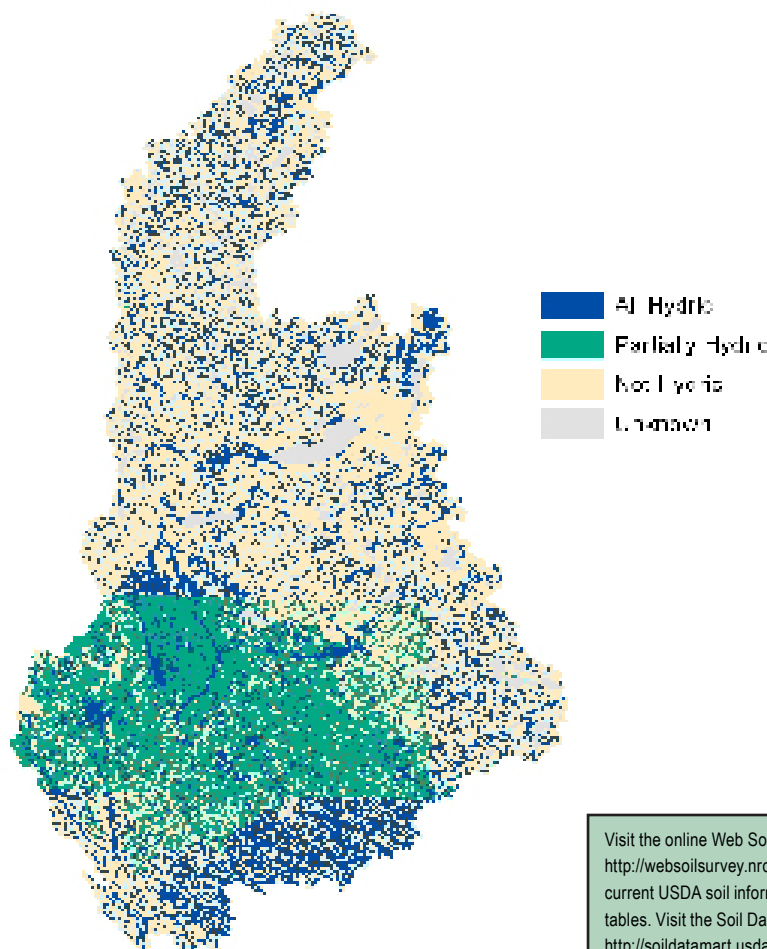
-  All water and unusable farmland
-  Farmland of statewide importance
-  Prime farmland (fisheries)
-  Prime farmland (disturbed and processed from logging)
-  Prime farmland (disturbed from logging)
-  Nonprime farmland

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Hydric Soils

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of nonhydric soils in the higher positions on the landform. Map units of dominantly non-hydric soils may therefore have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as “soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (Federal Register 1994).



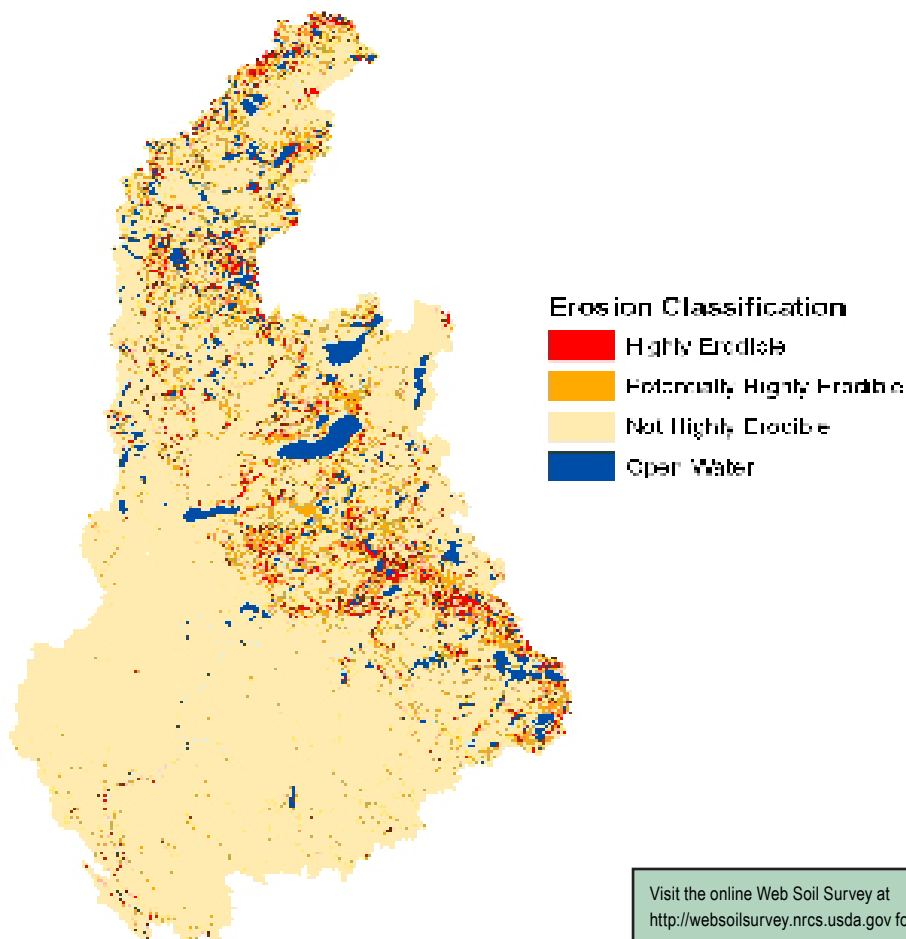
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Highly Erodible Land (HEL)

The erodibility index (EI) for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss tolerance (T) value established for the soil in the FOTG as of January 1, 1990.

A soil map unit with an EI of 8 or greater is considered to be highly erodible land (HEL).

Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.

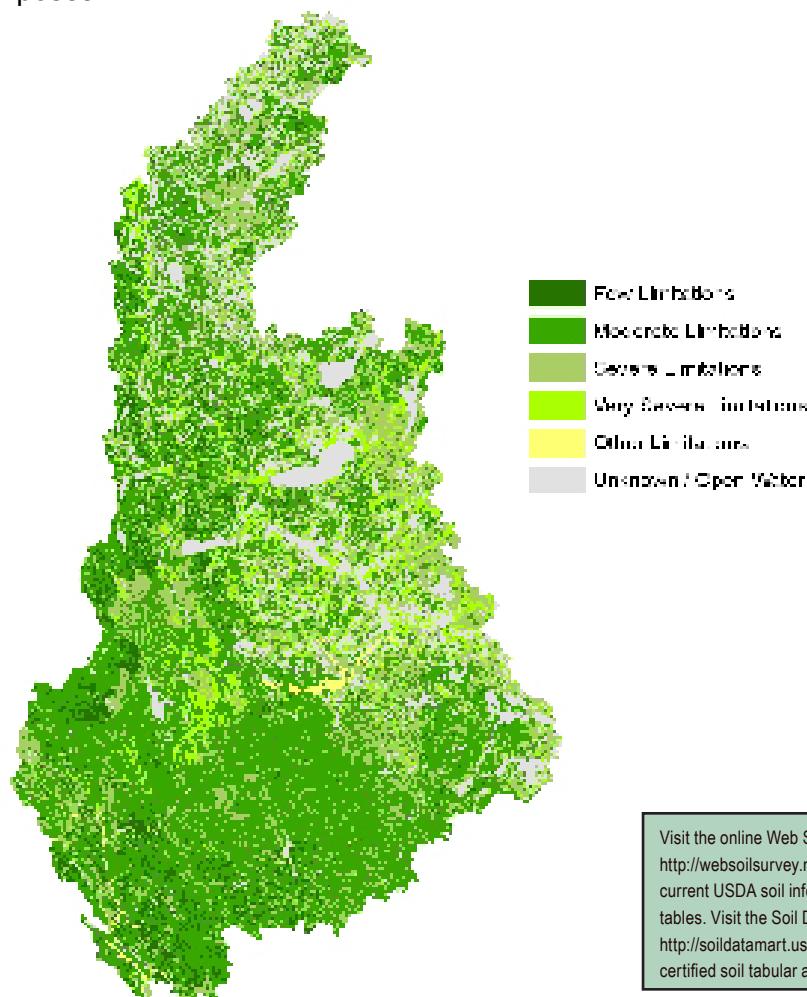


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Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management.

The criteria used in grouping the soils does not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



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Performance Results System and Other Data

In the three year reporting period NRCS Conservation treatment practices applied or prescribed within the Chippewa watershed in the last three years have primarily concentrated on Conservation tillage (12,446 acres/yr average), Conservation Crop Rotations (4,928 acres/yr), Nutrient Management (2,599 acres/yr), Prescribed Grazing (1,866 acres/yr), and Wildlife Habitat (1342 acres/yr). Other notable efforts have been made in areas of air quality/ wind erosion management, with the addition of an average 143,541 feet of windbreak annually.

Conservation Treatment Acres	NRCS Practice Code	FY 04	FY 05	FY 06	Avg/Year	Total
Waste Management (Number)	313, 317, 359	0	0	0	0	0
Buffers (Acres)	391, 393	356	403	287	349	1046
Erosion Control (Acres)	311, 332, 589, 386, 412, 600, 601, 603, 380, 650	422	74	33	176	529
Irrigation Water Management (Acres)	449	0	363	2,070	811	2433
Wind Break (ft)	380	185,313	148,897	96,414	143541	430624
Atmospheric Resource Quality Management (Acres)	370	0	0	0	0	0
Nutrient Management (Acres)	590	933	2,288	4,576	2599	7797
Pest Management (Acres)	595	0	145	187	111	332
Prescribed Grazing (Acres)	528, 472, 528A	2,158	1,323	2,118	1866	5599
Prescribed Burning (Acres)	338	76	92	195	121	363
Trees & Shrubs (Acres)	612, 666	742	32	35	270	809
Conservation Tillage (Acres)	329A, 329B, 329C	5,061	14,945	17,331	12446	37337
Conservation Crop Rotations (Acres)	328	4,492	3,147	7,145	4928	14784
Cover Crops (Acres)	340	106	0	144	83	250
Wildlife Habitat (Acres)	644, 645	1,406	478	2,142	1342	4026
Brush Management (Acres)	314	0	0	0	0	0
Restoration of Declining Habitat (Acres)	643	1,049	140	962	717	2151
Wetland Wildlife Habitat Management (Acres)	644	27	41	219	96	287
Wetlands (Acres)	657, 658, 659	1,358	535	961	951	2854
LANDS REMOVED FROM PRODUCTION THROUGH FARM BILL PROGRAMS ^{/11}						
Program				Acres		
Conservation Reserve Program (CRP)				64,099		
Wetland Restoration Program (WRP)				1,017		
Conservation Reserve Enhancement Program (CREP)				10,661		

Socioeconomic and Agricultural Data (Relevant)

Estimates for the Chippewa subbasin show a population of just under 42,300 people. Median household income throughout the district is \$31,201 yearly, roughly 67% of the national average. Sixty seven percent of the population over the age of 18 is active in the workforce, and approximately 8% of the residents in the watershed are below the national poverty level.

There are 2,293 farms in the subbasin. Approximately 50 percent of the operations are less than 180 acres in size, nearly 40 percent are 180 to 1000 acres in size, and the remaining farms are larger than 1000 acres. Sixty four percent of the producers are full time operators and do not rely on off farm income.



Chippewa (MN) HUC#7020005 ¹²		
Population Data	Watershed Population	42,283
	Unemployment Rate	4.11%
	Median Household Income	31,201
	% below poverty level	8%
	Median Value of Home	64,232
Farms	# of Farms	2,293
	# of Operators	2293
	# of Full Time Operators	1476
	# of Part Time Operators	817
	Total Crop/Pasturelands	996,700
Farm Size	1 to 49 Acres	485
	50 to 179 Acres	671
	180 to 499 Acres	629
	500 to 999 Acres	274
	1,000 Acres or more	234
Livestock & Poultry	Cattle - Beef	65,155
	Cattle - Dairy	52,708
	Chicken	127,994
	Swine	122,376
	Turkey	2,180,644
	Other	39,867
	Animal Count Total:	2,588,745
	Total Permitted AFOs	889
Chem (Acres Applied)	Insecticides	11,709.16
	Herbicides	167,744.10
	Wormicides	116.76
	Fruiticides	4,727.28
	Total Chemicals	184,297.30
	% State Chemical Totals	1.29%

RESOURCE CONCERNS

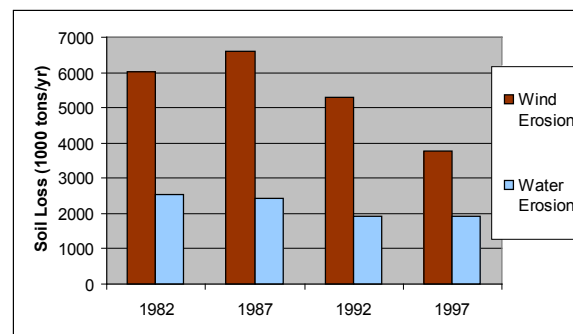
County Soil and Water Conservation Districts in the Watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:

- **Soil Quality, Excessive Sheet and Rill Erosion.** Soil Erosion and Deposition has ranked as a top concern in each county within the watershed.
- **Soil Quality, Excessive Wind Erosion.** Topography makes wind erosion major conservation issue. Wind erosion physically removes the lighter, less dense soil constituents such as organic matter, clays, silts, thus removing the fertile part of the soil and lowering productivity.
- **Surface Water Quality, Nutrients.** Reduction of priority pollutants and sediments in surface waters is a priority issue throughout the watershed. Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing an unbalanced fish community with depressed populations and limited diversity.
- **Ground Water Quality, Nutrients, Organics, Animal and Human Waste.** Aging septic systems, feedlot runoff, cropland nutrient runoff, tilling practices, and abandoned wells all pose significant threats to groundwater quality throughout the region. Sealing of abandoned wells is a priority in addressing ground water quality.
- **Surface Water Management, Flood Control, Drainage Management.** Drained wetlands, crop production in flood prone areas, and aging dams all diminish surface water quality and productivity. Restoration of wetlands, dam repair and placing flood-prone lands in CRP/RIM all serve to lessen the impact of flooding and improve drainage.



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- NRI estimates for sheet and rill erosion by water on the cropland and pastureland declined by approximately 612,000 tons of soil (24.21%) between the years 1982 and 1997.
- NRI trends indicate wind erosion rates on agricultural lands in the subbasin decreased by 2,232,000 tons of soil (37.19%) between the years 1982 and 1997.



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Federally Listed Threatened And Endangered Species^{/14}

ENDANGERED SPECIES	CANDIDATE SPECIES
Fish – Topeka Shiner	Insect – Dakota Skipper
THREATENED SPECIES	PROPOSED SPECIES
Plants – Western Prairie Fringed Orchid, Prairie Bush Clover	None
Essential Habitat - Prairie river and stream habitat for the Topeka Shiner, Native Prairie for Dakota Skipper	

Watershed Projects, Plans and Monitoring*

- **Chippewa River Watershed Project.** The Chippewa River Watershed Project seeks to improve water quality and flooding problems within the Chippewa River watershed while promoting a healthy agricultural, industrial, and recreation-based economy for the region.
- **Friends of The Minnesota Valley Watershed Initiative.** Puts an exciting twist on traditional approaches to watershed management within the Minnesota River Valley. This creative grass-roots program is the culmination of years of planning, and is based on the input of many individuals representing a variety of interests and possessing significant expertise on Minnesota River issues
- **Shakopee Creek Headwaters Project.** Project is a locally based effort to cooperatively monitor and identify sources of polluted run-off in the Shakopee Creek Headwaters Watershed and to promote conservation practices which target water quality improvement and flood reduction through education and incentive-based programs
- **Greater Minnesota River Turbidity TMDL Work Plan, MPCA.** This project concerns turbidity impairments in the Minnesota River Basin. The project area begins near Lac Qui Parle, and ends at Jordan. The effort involves 18 reaches on the mainstem and lower tributaries.
- **Trappers Run Watershed Project.** The purpose of the Trapper's Run Project is to investigate poor water quality conditions in Trapper's Run Creek and offer solutions to improve it. Elements of this project include water quality monitoring, feedlot inventory, septic inventory, fish and vegetative survey, and restorable wetland inventory.
- **Minnesota River Assessment Project (MRAP) Land Use Assessment.** Inventories non-point source as well as small-point sources of pollution within the 37 select minor watersheds in the Minnesota River Basin. Potential small-point pollution sources include: dumps, wells, septic systems, tile intakes and outlets, feedlots, unique areas (such as auto body shops and golf courses), and gravel pits.
- **Minnesota River Assessment Project (MRAP) Biological and Toxicological Assessment.** The study adapts and calibrates the Index of Biotic Integrity (IBI) for application in the basin; evaluates stream quality using IBI within select minor watersheds; and assesses the biological conditions of watersheds using the IBI. Fish communities are analyzed at 116 sites along the Minnesota River mainstem and tributaries.



* Have a watershed project you'd like to see included? Submit suggestions online @ <http://www.mn.nrcs.usda.gov/technical/rwa/>

Conservation Districts, Organizations & Partners

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| <ul style="list-style-type: none"> • Chippewa County SWCD
629 N. 11TH ST, Suite 7, Montevideo MN 56265
Phone: 320-269-2139 EXT 101 • Chippewa River Watershed Project
629 North 11th Street Montevideo, MN 56265
Phone 320-269-2139 • Coalition for a Clean Minnesota River
P.O. Box 488 New Ulm , MN 56073
Phone 507-359-2346 • Clean Up River Environment (CURE)
114 1ST ST West, Montevideo MN 56265
Phone: 320-236-2984 • Douglas County SWCD
900 Robert Street Suite 102 Alexandria, MN 56308
Phone 320-763-3191 Ext. 3 • Grant County SWCD
17 Central Avenue N #177 Elbow Lake, MN 56531
Phone 218-685-5395 • Kandiyohi County SWCD
1005 High Avenue NE; Willmar, MN 56201
Phone 320-231-2844 | <ul style="list-style-type: none"> • Minnesota River Basin Joint Powers Board
600 E. 4th St #14 Chaska, MN 55318-2108
Phone 952-361-6590 Fax 952-361-6594 • Ottertail County SWCD
655 3rd Avenue SE Perham, MN 56573
Phone 218-346-2050 • Pope County SWCD
160 Franklin St N, Glenwood, MN 56336
Phone 320-634-5327 • Prairie Country RC&D
1005 High Avenue NE Willmar, MN 56201-4817
Phone 320-231-0008 Fax 320-235-8151 • Stevens County SWCD
12 Hwy 28 E Suite 2 Morris MN 56267
Phone (320) 589-4886 ext. 3 • Stearns County SWCD
110 2nd Street S, Suite 128 Waite Park, MN 56387
Phone 320-251-7800, Ext. 3 • Swift County SWCD
1430 Utah Ave. Benson, MN 56215
Phone 320 843-7201 |
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Footnotes / Bibliography

1. Ownership Layer – Source: MN Stewardship Data: Minnesota Department of Natural Resources, Section of Wildlife, BRW, Inc, 2007. This is the complete GAP Stewardship database containing land ownership information for the entire state of Minnesota. Date of source material is variable and ranges from 1976 to 2007, although a date range of 1983 to 1985 predominates. Land interest is expressed only when some organization owns or administers more than 50% of a forty except where DNR could create sub-forty accuracy polygons.
2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Minnesota Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA.
3. Ownership layer classes grouped to calculate Public ownership vs. Private and Tribal ownership by Minnesota NRCS Rapid Watershed Assessment Staff. Land cover / Land use data was then extracted from the National Landcover Dataset Classification System and related to ownership class polygons.
4. USGS 1:100,000 Hydrography Layer .This data set represents all features coded as ‘rivers’ on the USGS 1:100,000-scale DLG Hydrography data set. This current version was converted to ARC/INFO by the Land Management Information Center and edge-matched across map sheet boundaries. Minnesota DNR made further modifications to the files, verified lake feature identifiers, and created a state layer from the separate 100k data. The Hydro 100k layer was compared to MPCA’s 303(d) data to derive percentage of listed waters.
5. Land Cover / Land Use / Hydro 100k Buffer. Using the 100k Hydrology dataset, All streams within HUC were spatially buffered to a distance of 100 ft. National Landcover Dataset attributes were extracted for the spatial buffer to demonstrate the vegetation and landuse in vulnerable areas adjacent to waterways.
6. Land Capability Class. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
7. 1997 NRI Irrigated Land Estimates. Irrigated land: Land that shows evidence of being irrigated during the year of the inventory or during two or more years out of the last four years. Water is supplied to crops by ditches, pipes, or other conduits. Water spreading is not considered irrigation; it is recorded as a conservation practice. [NRI-97] For more information: <http://www.nrcs.usda.gov/technical/NRI/>
8. 303(d) Stream data. Minnesota’s Final Impaired Waters (per Section 303(d) Clean Water Act), 2006. Data obtained from Minnesota Pollution Control Agency (MPCA). The Minnesota Pollution Control Agency (MPCA) helps protect state water by monitoring quality, setting standards and controlling inputs through the development of TMDL plans. <http://www.pca.state.mn.us/water/tmdl/index.html#maps>.

Footnotes / Bibliography (continued)

9. National Coordinated Common Resource Area (CRA) Geographic Database. A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area

10. Soil Survey Geographic Database (SSURGO) Tabular and spatial data obtained from NRCS Soil Data Mart at <http://soildatamart.nrcs.gov>. Publication dates vary by county. Component and layer tables were linked to the spatial data via SDV 5.1 and ARCGIS 9.1 to derive the soil classifications presented in these examples. Highly Erodible Land Classification Data obtained from USDA/NRCS EFOTG Section II, County Soil Data. HEL classifications were appended to SSURGO spatial data via an ARCEdit session. Addendum and publication dates vary by county.

11. Lands removed from production through farm bill programs. County enrollment derived from the following: CRP Acres: www.fsa.usda.gov/crpstorpt/07Approved/r1sumyr/mn.htm (7/30/04). CREP Acres: <http://www.bwsr.state.mn.us/easements/crep/easementssummary.html> (7/31/03). WRP Acres: NRCS (8/16/04). Data were obtained by county and adjusted by percent of HUC in the county.

12. Socioeconomic and Agricultural Census Data were taken from the U.S. Population Census, 2000 and 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Unemployment statistics obtained from the Bureau of Labor Statistics - Labor Force Data by County, 2006 Annual Averages <http://www.bls.gov> Data were also taken from MPCA AFO/CAFO counts provided by county for 2005.

13. 1997 NRI Estimates for sheet and rill erosion (WEQ & USLE). The NRI estimates sheet and rill erosion together using the Universal Soil Loss Equation (USLE). The Revised Universal Soil Loss Equation (RUSLE) was not used in the 1997 NRI. RUSLE was not available for previous inventories, therefore the use of USLE was continued to preserve the trending capacity of the NRI database. Wind erosion is estimated using the Wind Erosion Equation (WEQ). For further information visit <http://www.mn.nrcs.usda.gov/technical/nri/findings/erosion.htm>

14. Federally listed endangered and threatened species counts obtained from NRCS Field Office Technical Guide, Section II, Threatened and Endangered List. <http://www.nrcs.usda.gov/Technical/efotg/>. Essential fish habitat as established by Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265, as amended through October 11, 1996 <http://www.nmfs.noaa.gov/sfa/magact/>

15. Watershed Projects, Plans, Monitoring. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, <http://www.nrcs.usda.gov/programs/watershed/Purpose>.